

midst of active living organisms. I believe that this is the real reason for the development of side- and covering-plates in the crinoids of the deeper waters, and for their suppression or non-existence in littoral forms and in pelagic forms like *Uintacrinus*; and this idea is further borne out by the fact that shallow-water species belonging to normally deep-water groups having large side- and covering-plates have these but feebly developed, while deep-water species belonging to groups ordinarily inhabiting shallow water, and devoid of these plates, are commonly found to possess them. As an instance of the former case may be mentioned *Ptilometra macronema* (J. Müller), of the latter *Comatilia iridometri-formis*, A. H. Clark, or *Nemaster iowensis* (Springer).

L.—*Descriptions and Records of Bees.*—XXVII.
By T. D. A. COCKERELL, University of Colorado.

Greeleyella resinata, sp. n.

♀.—Length 8–8½ mm.

Black, with scanty pale pubescence, tinged with yellowish above; mesothorax and abdomen shining; hind tarsi (except for the hair) dark; flagellum variably reddish beneath; first r. n. meeting first t.-c., or entering basal corner of second s.m. Very closely related to *G. beardleyi*, Ckll. (syn. *Panurginus malvastris*, Sw. & Ckll.), but differing as follows:—A trifle smaller; abdominal segments beyond the first, instead of being smooth, with small punctures, have the surface microscopically transversely striate; scutellum with a slight median groove or depression; tegulæ darker and smaller; anterior tibiæ &c. not pallid in front.

Hab. Lee County, Texas (*G. Birkmann*); four females, sent by Prof. C. F. Baker (no. 7107).

Halictoides ilicifoliae, sp. n.

♂.—Length 5½ mm. or a fraction more.

Black, with greyish-white pubescence; wings hyaline, nervures and stigma dark fuscous; mandibles with the apical half ferruginous, the cutting-edge rather broad, notched; head broad, eyes strongly converging below; face with much white hair; antennæ short for a male, dark, flagellum obscurely reddish beneath; head and thorax shining, the base

of metathorax smooth and very brilliant; tegulæ shining reddish brown; abdomen broad, like that of a female, delicately but evidently punctured, the hind margins of the segments ferruginous; apex covered with white hair. The following characters are ascertained with the compound microscope:—Third and fourth antennal joints very short; apical joint with an oblique flat shining face; the six-jointed maxillary palpi short and stout, but still extending beyond the blade of maxilla, which is short and broad, very obtusely rounded apically; front strongly punctured; claws deeply cleft, pulvillus very large. The wings are quite clear; the venation differs from that of *H. tinsleyi*, Ckll., by the shorter second s.m., with the first r. n. entering very near its base, and the b. n. falling a considerable distance (about $65\ \mu$) short of t.-m. The labial palpi are short, with first joint not nearly so long as the other three together. The tongue is very short.

Hab. Santa Clara County, California, at flowers of *Prunus ilicifolia* (Nuttall); four males (*C. F. Baker*, 7109).

This remarkable bee is so distinct from genuine *Halictoides* in its mouth-parts that it must stand as the type of a new genus or subgenus, which may be called *Amblyapis*.

AMBLYAPIS, gen. v. subgen. nov. (type *ilicifoliae*).

Maxillary palpi 6-jointed, stout, with very short bristles, mostly at end of joints; length of joints in μ :—(1) 135, (2) 100, (3) 85, (4) 75, (5) 68, (6) 100; last joint slender; blade of maxilla about $425\ \mu$ long and 220 broad, thus very short and wide, subtriangular, very obtuse at end, with long bristles; maxillary comb with about five short teeth.

Labial palpi 4-jointed, very short, joints measuring in μ : (1) 100, (2) 85, (3) 68, (4) 85. The extraordinary feature of these palpi is in the second and third joints, which have one side heavily chitinized, forming a sort of sheath, which is produced outwards to a bristly point. Paraglossæ very short; tongue extremely short. The striated muscle which operates the tongue and adjacent organs is extremely coarse, the striæ only about five in $37\ \mu$ of length.

In *Halictoides tinsleyi* the blade of maxilla is divided longitudinally into two parts, the outer, which is shorter than the inner, having a width in middle of $68\ \mu$, and being wholly without bristles or markings. In *Amblyapis ilicifoliae* this outer part is much reduced, about $50\ \mu$ wide towards the base, but rapidly tapering and coming to a point about $170\ \mu$ before the end of the blade. In *H. dentiventris*, Nyl., the

type of *Halictoides*, the condition of the blade is essentially as in *H. tinsleyi*. In *H. paradoxus*, Moraw., the outer portion is also well developed, ending obtusely $187\ \mu$ before the rather narrow apex of the blade, which bears very long bristles. In *Dufourea vulgaris* the blade is narrow, with long bristles. The bipartite condition of the maxillary blade is very strongly developed in *Halictus*, e. g. *H. sisymbrii*, Ckll., and *H. armaticeps*, Cresson, and the European *H. virescens*. In *Melitta leporina* there is no sign of it. In *Pseudopanurgus aethiops*, Cress., the outer or subhyaline area is present and tapers apically as in *Amblyapis*. In *Nomia nortoni*, Cress., the outer area is present, but narrow (about one-ninth total width of blade) and tapering. In *Dasypodus plumipes* it is reduced to an inconspicuous subhyaline margin, broadening basally, where its width is about one-fifteenth that of the blade.

Agapostemon texanus iowensis, subsp. n.

♀.—Similar to *A. texanus*, Cresson, but rather small (anterior wing $7\frac{1}{2}$ mm.); mesothorax, while showing the double puncturation of *texanus* quite distinctly, much rougher, the smaller punctures more crowded; metathorax with the basal triangle distinctly defined by raised lines, but the sculpture coarser than in subsp. *subtilior*, Ckll.; abdomen broader than in *A. radiatus*.

Hab. Ames, Iowa, 1899 (*Wilmon Newell*).

Possibly a hybrid with *A. radiatus*. The abdomen is without evident hair-bands; in *subtilior* these are very distinct.

Anthidium subochraceum, Walker, 1871.

This species, from Mount Sinai, was very poorly described by Walker, and has never been recognized since. I examined the type at the British Museum, and am able to add the following particulars:—Front down to clypeus black, except for a red band below middle ocellus and the broad (narrowing at summit) yellowish-ferruginous bands next to orbits; mandibles 4-dentate; hair of head and thorax above strongly fulvous; punctures of abdomen rather large. Wings reddish, apical region suffusedly darker; stigma ferruginous. Legs ferruginous shaded with orange; apparently no pulvilli. Abdomen above dark reddish, with the bases of the second and following segments broadly and suffusedly blackened, the hind margins of the segments a sort of pale orange; scopa white; second r. n. going beyond second s.m.; scutellum

with hind edge projecting, sharp, emarginate in middle; axillæ obtusely angulate. The abdomen is wholly without yellow or white lands, but the base of the sixth segment shows obscure pallid spots alternating with dark ones.

Appears to be related to *Dianthidium ferrugineum* (Fabr.).

Eucera cinerascens, Walker, 1871.

Another unrecognized species. I have not seen the male type, but a female from the convent garden at Mount Sinai, which Walker thought probably conspecific, is an *Anthophora*. It is in wretched condition, with matted hair; clypeus black, with a keel or ridge on its upper two-thirds in the median line; labrum with a pair of basal yellowish spots.

Tetralonia spoliata, Walker, 1871.

Also unknown to recent writers. Walker's female from Mt. Sinai is in bad condition; hair of head and thorax above badly matted, but appears to have been deep fulvous; clypeus all black, densely and coarsely punctured; abdominal bands yellowish, hind margin of first segment rather broadly rufous; wings not dark. Comparison with Walker's description shows that the latter is inaccurate as well as too short.

Cœlixys philippensis, Bingham, 1895.

I have examined the male type. Anterior wings dark fuscous, shining violaceous; head and thorax with extremely large punctures; abdomen 8-dentate. Easily recognized by the first abdominal segment being dorsally covered with fine moss-like white tomentum.

Halictus dybowskii, Rad., 1877.

A female in the British Museum is one of those collected by Dybowsky. It is a large black species, very shiny, with large strongly *tridentate* mandibles. Head large, face very broad; clypeus sparsely punctured; area of metathorax plicatulate, *its apical part transversely wrinkled*; apical truncation of metathorax with the lateral marginal keels going about halfway up; anterior wing $9\frac{1}{2}$ mm.; wings dusky, venation normal; hind spur very finely denticulate, the denticles minute, short, and numerous; abdomen with no apical hair-bands, but some basal pale pubescence.

Halictus flavovittatus, W. F. Kirby.

I have examined the female type from Socotra. It is a true *Halictus*, with normal venation, but remarkable for the character of the abdomen, the segments very black, with the margins narrowly ivory-colour, without hair-bands. Area of metathorax large, granular-striatulate; hind spur minutely short-ciliate. *H. vittatus*, Smith, from the Cape of Good Hope, has similar tegumentary bands, but it is not so large, and the bands are light yellow, the first quite golden yellow. The specimen examined, in the British Museum, is marked *vittatus*, variety.

Halictus niloticus, Smith, 1879.

The type, a male, is a green insect with a curious large head, and a peculiar thing is that the upper ends of the eyes are green. There is a large yellow spot on lower part of clypeus.

Halictus farinosus, Smith.

Rim Rock, Sandia Mountains, New Mexico, at flowers of *Frasera*, 1 ♂ (*J. R. Watson*). New to New Mexico.

COLLETES.

The following table for the separation of some little-known species was prepared at the British Museum. The Radoszkowski species should be authentic, as they were received from the describer:—

Very small, anterior wing 5 mm.: densely covered with white hair; bases of abdominal segments, where exposed, densely punctured; nervures and stigma pale ferruginous; second s.m. broad, receiving r. n. in middle; posterior face of metathorax covered with hair. ♂. (Askabad.)	<i>askhabadensis</i> , Rads.
Larger, not thus hairy; malar space in no case long	1.
1. Thorax above covered with short pale ochreous moss-like hair, like the American <i>C. aberrans</i> , Ckll.; anterior wing 7 mm. long; abdomen with broad bands of greyish-white tomentum, the first segment densely and coarsely punctured, second densely and finely, in strong contrast; nervures and stigma dark, paler basally; antennæ very short. ♀. (Askabad.).....	<i>carinatus</i> , Rads.
Thorax with normal pubescence	2.

2. Hair fringing thoracic dorsum, and on each side of antennæ, fox-red; size ordinary. Hair of sides of metathorax and of pleura greyish white; abdomen, when fresh, with narrow white hair-bands, very conspicuous, on hind margins of segments 2 to 5; mesothorax in middle nude, shining, with scattered large punctures; second s.m. very broad, much broader above than third; first abdominal segment with punctures very much larger than on second; hind spur strongly ciliate; antennæ short.
 ♀ *sidemii*, Rads. (*jankowskyi*, Rads., is a synonym, if the specimen so labelled is authentic). 3.
 Hair of thorax &c. not so coloured 3.
3. Size smaller, length about 9 mm.: no dark hair on head or thorax; abdomen with broad bands of yellowish-white tomentum; hind margin of first segment (tegument) rather broadly reddish; tegulæ very pale reddish; antennæ short; clypeus sparsely punctured in middle; nervures and stigma rather dark; hind spur very minutely ciliate.
 ♀ *mirtus*, Rads. 4.
 Larger, with some fuscous hair on thorax above 4.
4. Abdomen dull, first segment granular, not punctured; anterior wings dilute fuliginous; flagellum ferruginous beneath except at base *dudgeonii*, Bingham. 5.
 First abdominal segment well punctured. 5.
5. Abdomen very shiny, pyriform, first segment relatively weakly punctured, though very distinctly, its hind margin ferruginous; wings yellowish. (Japan.) *perforator*, Smith (type).
 Abdomen duller, first segment strongly and coarsely punctured, its hind margin not reddened, but covered, as also base of second segment broadly and apices of segments 2 to 5, with greyish-white hair; face broad. ♀ *gallicus*, Rads.

The example of *C. dudgeonii* appears to be correctly named, although it is from the Bombay district, and has anterior wings quite strongly fuscous. It is 13 mm. long; clypeus and front densely punctured; tegulæ very dark brown; abdomen dull, not punctured.

Diadasia afflictula, sp. n.

♂.—Length about 7 mm., width of abdomen $2\frac{1}{2}$.

Runs in my table ('American Naturalist,' xxxix. p. 743) to *D. afflicta*, Cresson, to which it is in every way very closely related, differing in the much smaller size and slender abdomen. Tegulæ rather light ferruginous; second submarginal cell much contracted above; hair of thorax above and pubescence generally very pale ochreous. I had this mixed with *D. diminuta*, from which it is easily known by the short black or dark fuscous hair on the abdominal segments beyond the second, of course not involving the broad apical fringe. The hair of the apical fringes is appressed, not erect as in *D. skinneri*, Ckll., which also differs greatly by its short broad abdomen.

Hab. Mesilla, New Mexico, May 1 (*Cockerell*).

Pseudopanurgus cameroni (Baker).

Pasiphaë cameroni, Baker, *Invertebrata Pacifica*, i. 1906, p. 141.

I am greatly indebted to Professor C. F. Baker for the loan of one of the original types. The b. n. falls short of t.-m. a distance nearly equal to length of second s.m. on first discoidal.

Xenoglossa crawfordi, sp. n.

♂.—Length about 21 mm. (difficult to measure, the abdomen being curved downwards and inwards); anterior wings about 14 mm., width of abdomen $7\frac{1}{2}$.

Black, including the legs, the hind margins of the abdominal segments (except the first) broadly semitranslucent coppery red; clypeus lemon-yellow, with its upper margin broadly black and its lower ferruginous; greater part of mandibles yellow; labrum pallid, with light brownish hair; face rather narrow, eyes very large, converging above, ocelli very large; hair of face pale brownish, whitish at sides near clypeus, of cheeks below rather dull white, of vertex reddish sooty; antennæ black, only moderately long, last eight joints with obscure reddish spots, third joint longer than fourth, but not as long as 4 and 5 together; mesothorax and scutellum dull, densely minutely punctured; thorax above with hair light ochreous, pleura with the same, but paler, but metathorax with it very dark chocolate-brown, except a tuft of ochreous in the middle of the basal area; hair of legs dark chocolate, pale ochreous on anterior femora behind and to some extent pallid on middle femora; tegulæ piceous, punctured; wings dark fuliginous; abdomen with hair of first segment and

middle of base of second very dark fuscous, beyond this it consists of short dense warm ochraceous tomentum; apical plate (seventh segment) extremely broad, with a keel on each side; venter with dark hair. The structure is essentially as in *X. fulva*, Smith, including the venation.

Hab. Guadalajara, Mexico (*D. L. Crawford*, 7106).

Received from Prof. C. F. Baker.

Nomada vicinalis aldrichi, subsp. n.

♂.—Runs in the table of Rocky Mountain *Nomada* (Bull. 94, Colo. Agr. Exp. Sta.) to *N. vicinalis*, Cresson, to which it is very closely related, differing as follows:—Upper margin of clypeus more or less black; scape swollen; mesothorax wholly black; scutellum black, with a pair of variable (large or small) red spots; hind femora with more black; basal part of area of metathorax strongly wrinkled. From *N. vicinalis infrarubens*, Ckll., it differs by the hair of thorax above only slightly brownish; scutellum and mesothorax as just indicated; first abdominal segment with a broad entire red band. The lateral face-marks, clavate above, are much as in the supposed male of *N. cymbalariae*, Ckll., but the scape is much stouter than in the latter, which is, however, very closely allied. The venter of the abdomen is red, with a heart-shaped black mark on first segment, a black band at base of second, and a large yellow spot on apical segment; these markings vary from distinct to obscure. The apical plate is broad, hairy, and notched. The b. n. goes basad of the t.-m.

N. subaccepta, Ckll., is also related, but differs from *aldrichi* by its more prominent red scutellum, comparatively slender scape, &c.

The chrome-yellow markings of the abdomen are more reduced than in true *vicinalis*. On the second segment they are very large; on the third variable, from large to very small; on the fourth and fifth reduced or obsolete; on the sixth well developed and confluent.

Among Robertson's Illinois species it is nearest to *N. illinoensis*, Rob., which is a considerably smaller insect. The female, when discovered, will doubtless prove to have the head and thorax red.

Hab. Moscow, Idaho; two males in Philadelphia Acad. Nat. Sci., "deposited by Wm. J. Fox."

The insect is named after the well-known entomologist of Idaho.

Nomada modocorum, Ckll.

Pasadena, California, April 6 (*Grinnell*). New to California.

On May 29 Mr. Grinnell took *Haliectus catalinensis*, Ckll., at Pasadena, showing that it is not confined to Catalina Island.

LI.—*Two new African Shrews.*

By WILFRED H. OSGOOD.

As a further result of studies at the Natural History Museum two new shrews of the genus *Crocidura* have been found, which, like the rodents described in the March number of the 'Annals,' are named at the instance of Mr. Oldfield Thomas. Both are given subspecific rank, not only to indicate their positions in the large and unrevised genus to which they belong, but also because experience with groups more completely known has shown that closely related continental forms are more often proved to be connected by gradations than otherwise.

Crocidura bicolor elgonius, subsp. n.

Type from Kirui, near Mt. Elgon, British East Africa. Subadult female. Collected Sept. 5, 1909, by R. Kemp. Original number 198. Rudd Collection.

Characters.—Allied to *Crocidura bottegi* and *C. bicolor cunninghamei*; general colour more sooty than in either; upperparts brownish mouse-grey, the tips of the hairs only slightly paler than the bases; underparts pale smoke-grey; feet sooty, somewhat lighter laterally; tail sooty above, slightly paler below. Skull small and flat, with teeth decidedly smaller than in *cunninghamei*, slightly larger than in *bottegi*; skull more elongate and brain-case flatter than in *bottegi*.

Measurements.—Type and one topotype, respectively: total length 90, 97 mm.; head and body 52, 55; tail-vertebræ 38, 42; hind foot (s. u) 9, 9. Skull of type: condylo-incisive length 16.6; breadth of brain-case 7.4; maxillary breadth 4.8; upper tooth-row 7.5; length of molariform series 3.9; i^1 to pm^4 3.53; width of m^2 1.75.